

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claim 4 is currently being amended. No new matter is being added.

This amendment changes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 3-12 are now pending in this application.

Rejection under 35 U.S.C. § 103

Claims 3-9 and 11-12 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,060,686 to Jones (hereafter "Jones") in view of U.S. Patent No. 5,938,954 to Onuma et al. (hereafter "Onuma"). Claim 10 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Jones and Onuma, and further in view of U.S. Patent No. 3,632,955 to Cruickshank et al. (hereafter "Cruickshank"). Applicants respectfully traverse these rejections for at least the following reasons.

As an initial matter, applicants' note that the Examiner has not addressed applicants' arguments from the Amendment filed on October 23, 2006. While the Office Action asserts on page 3 that applicants' arguments are moot in view of the new ground(s) of rejection, applicants' note that at least claims 3-9 and 11-12 are rejected based on the same combination of references of Jones and Onuma. Applicants respectfully request that the Examiner address applicants' arguments in the next communication from the Patent Office.

Independent claim 4 recites "wherein the nozzle is formed as a disk having a flat surface area facing and extending along the workpiece and having the gas exit at the center thereof, and wherein the nozzle has a circular groove extending in a circumferential direction

on the flat surface area facing the workpiece, the circular groove surrounding the gas exit.” Jones, Cruickshank, and Onuma fail to suggest at least this feature, or the advantages attendant thereto.

The Office Action relies on Onuma for allegedly disclosing a nozzle “having a circular groove extending in the circumferential direction where the nozzle is formed as a disk and having a flat surface area extending in the circumferential direction.” While Onuma discloses a nozzle, Onuma does not disclose that its nozzle “has a circular groove extending in a circumferential direction on the flat surface area facing the workpiece, the circular groove surrounding the gas exit” as recited in claim 4. While Onuma discloses grooves 43, the Onuma grooves 43 are linear to allow thin wires 41 to move up and down in an axial direction in frame 42 (See Figs. 8(a), 8(b), 9; col. 15, lines 21-33). Moreover, the grooves 43 project into the irregular surface 46 that is being operated on by the Onuma nozzle. Onuma fails to disclose a circular groove that either (1) extends in a circumferential direction on a flat surface area of the nozzle facing the workpiece, or (2) that extends in a way to surround a gas exit of the nozzle.

Moreover, Jones and Onuma fail to suggest the advantages attendant to the apparatus of claim 4, where the groove is formed in a circumferential direction on a flat surface area of the disk shape nozzle. The groove arranged as recited in claim 4 may act as resistance against water, even if bubbles are generated during the operation (see present specification, page 8, paragraph [0036]). Thus, the gas atmosphere may be maintained within the nozzle. Jones and Onuma, failing to suggest a disk shaped nozzle with the groove as arranged in claim 4, fail to suggest the advantages resulting from this arrangement.

Jones and Onuma also fail to disclose “wherein the nozzle is formed as a disk” as recited in claim 4. The nozzle 20 of Jones is not formed as a disk, i.e., a circular solid plate, but is a hollow cylindrical nozzle, as can be seen in FIG. 2 of Jones. Moreover, nowhere does Onuma suggest, that even if a groove were to be formed in the nozzle of Jones, that the groove should extend in a circumferential direction on a flat surface of the nozzle facing the workpiece.

Cruickshank was cited for other features of the claims, but fails to cure the deficiencies of Jones and Onuma.

The dependent claims all ultimately depend from independent claim 4, and are patentable for at least the same reasons, as well as for further patentable features recited therein.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.


The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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